I. L. HOLMES.

Drum Stove.

No. 43,992. Patented Aug. 30, 1864.

Fig. 1.

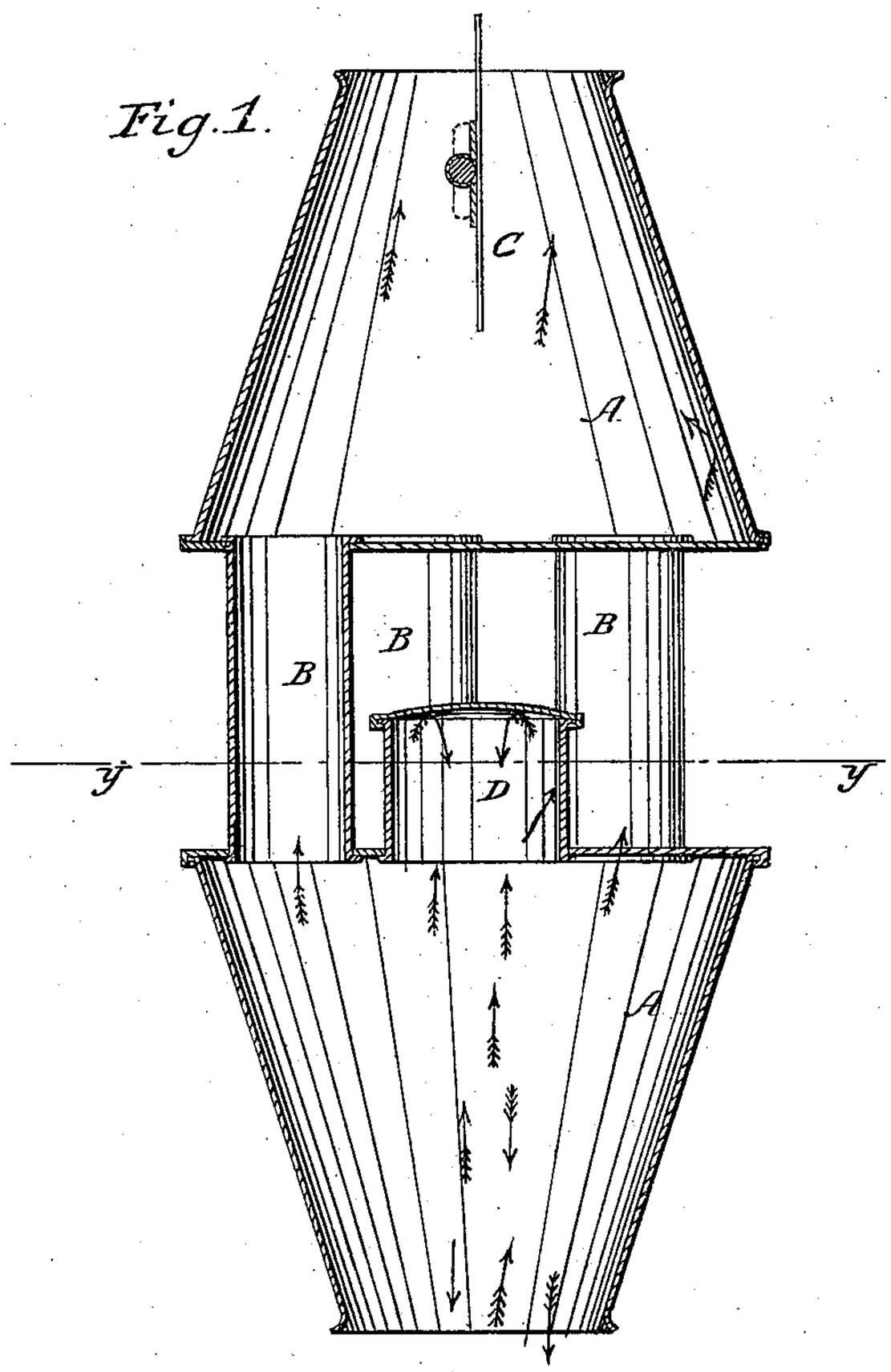
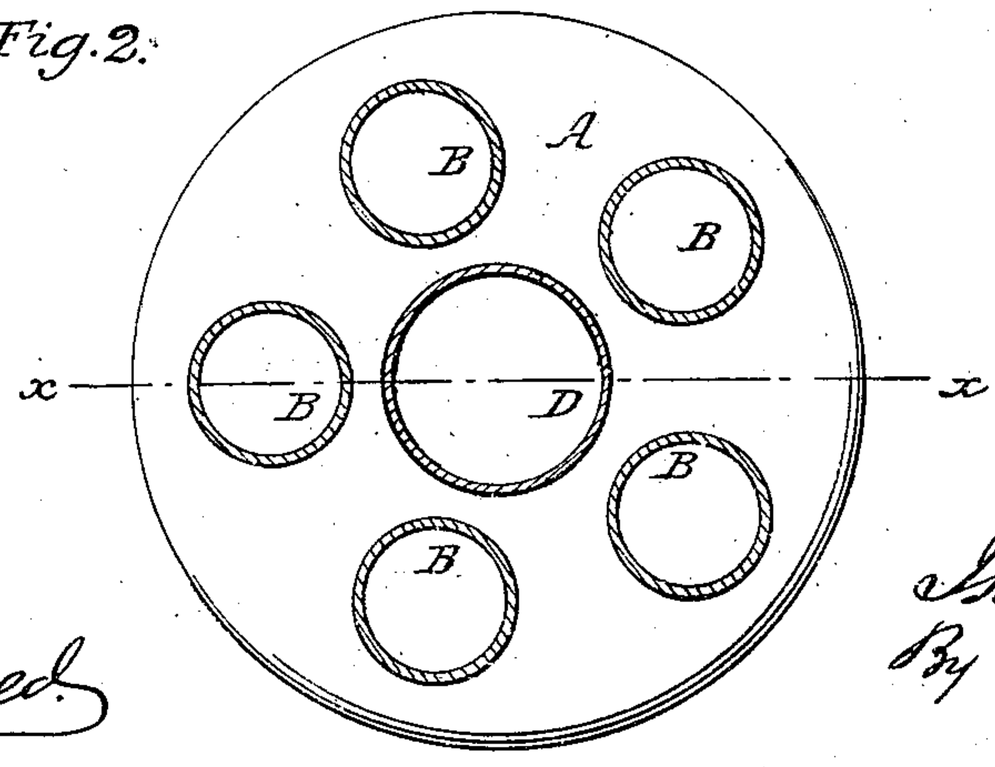



Fig. 2.




Witnesses.

J. W. Coombs

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# UNITED STATES PATENT OFFICE.

ISAAC L. HOLMES, OF HAYDENVILLE, MASSACHUSETTS.

## IMPROVEMENT IN DRUM-STOVES.

Specification forming part of Letters Patent No. **43,992,** dated August 30, 1864; antedated August 27, 1864.

*To all whom it may concern:*

Be it known that I, ISAAC L. HOLMES, of Haydenville, in the county of Hampshire and State of Massachusetts, have invented a new and Improved Heat-Radiator for the Pipes of Stoves, Heaters, &c.; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical central section of my invention, taken in the line *x x*, Fig. 2; Fig. 2, a horizontal section of the same, taken in the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts in the two figures.

This invention relates to a new and improved heat-radiator, designed to be attached to or connected with the pipes of stoves or heaters to radiate the heat which would otherwise escape through the pipe, and also to control the draft of the stove or heater.

The invention consists in the employment or use of two conical chambers connected by a series of pipes, the upper chamber being provided with a damper, and the lower chamber provided with a box to serve as a spark-arrester, all being constructed and arranged as hereinafter set forth.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A A represent two conical chambers, constructed of sheet metal and placed base to base, as shown clearly in Fig. 1. These conical chambers are not in contact, but are connected by tubes or pipes B, five being shown in Fig. 2, but more or less may be used. These pipes or tubes may be of any desired length, but about two-thirds the height of the chambers would probably be the most desirable length. They are connected to the bases of the chambers near their edges, are arranged in a circle, as shown in Fig. 2, and from the only communication between the two chambers. In the upper chamber A, near its top, there is placed a damper, C, the diameter of which is a trifle smaller than that part of the chamber in which it is placed, so that when the damper is closed a space will be allowed all around it to admit of the escape of the gases and noxious vapors, preventing the same from escaping into the room.

At the upper part of the lower chamber A, at its center, there is a box, D, which serves as a spark-arrester. This box may be rather larger in diameter than the tubes or pipes B.

The operation is as follows: The radiator is connected at its ends to joints of the pipe of the stove or heater, and the products of combustion pass into the lower chamber A, which serves as a radiator, and thence pass up through the tubes or pipes B into the upper chamber A, the tubes or pipes radiating considerable heat. The products of combustion, as they pass into the upper chamber A, impinge against the side of the latter and cause it to radiate a great amount of heat, so that the pipe above the upper chamber will be comparatively cool. The strength of the draft is regulated by the damper C, which, in consequence of being in the upper part of the upper chamber A, admits the products of combustion to pass slowly through the radiator, so that the heat may be radiated therefrom. The sparks are arrested by the box D, as the former will pass centrally up into the lower chamber A, in consequence of the draft always being the strongest at the center of a stove pipe. The sparks, by the impetus thus given them, which is partially due to their gravity, pass into the box D, their ascent being thereby checked, they fall or drop and become cool, and pass down the pipe into the fire-chamber of the stove.

The black arrows show the direction of the draft, and the red arrows show the direction of the sparks.

The device may be constructed at a moderate cost, and will effect a very considerable saving in the consumption of fuel.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In the construction of drum-stoves, the two conical chambers A A, connected by a series of tubes or pipes, B, with a damper, C, in the upper chamber A, and the spark-arrester D in the lower chamber A, all arranged substantially as and for the purpose herein set forth.

ISAAC L. HOLMES.

Witnesses:
ELAM GRAVES,
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